DARK ENERGY SURVEY

Commissioning & Science Verification Vignettes

Douglas L. Tucker

DES Calibrations Telecon
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From Alistair's talk.

Phase 2: DECam Commissioning

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- Phases 2A, 2B
  - STARS!!!
  - Monitoring & exercising activities
  - Daytime calibrations and CCD tests (some are every day, others less often)
  - Telescope & TCS tests – pointing, tracking
  - Focus – map, in-and-out, sky position, filter, temperature
  - Donut, BCams, alignment
  - Autofocus
  - Crosstalk, ghosts, scattered light
  - Guiding
  - Calibrations – dome flats, star field flats, sky flats
  - Photometry, astrometry
  - Reliability, efficiency, user interface, tool evaluation

- 14 days + 6 floating contingency

From Alistair's talk.

Phase 2 DECam Commissioning

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- Phases 2C, 2D
  - Community protocols qualification - test DECam performance and reliability and the ability of the Community Pipeline to reduce the data.
    - Deep dithered field. Long exposures, high background
    - Low galactic latitude field, multiple filters
    - Variable star density – e.g. large globular cluster or resolved nearby galaxy
    - Establish optimal dither patterns
    - Etc
  - DES protocol qualification – Test DECam performance and reliability and the ability of the DESDM pipeline to reduce the data
    - Test also analysis codes on real DES-like data
    - Test ObsTac
    - Test QuickReduce in the DES context
    - etc
  - 11 days + 5 floating contingency

From Alistair's talk.

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Schedule

Phase	Activity	Time (w)	Elapsed (m)	Nominal start
ONE	Install Imager	3	0.75	Aug 2
TWO	On sky tests (a+b)	2	1.25	Sept 1
	Breather	2	1.75	Sept 27
TWO	On sky tests (c+d)	2	2.25	Oct 6
Observing	Science Verification	3-4	3.25	Oct 23
	Engineering	1	3.5	Nov 16
Observing	DES/regular observing			Nov 20

From Don's talk.

DESDM and Commissioning

- Early
  - Compute Bias and Flat
  - Apply and verify crosstalk
- ~Oct 6-13:
  - Bias, flat, astrometry (e.g distortion correction) and catalog with designated magnitudes
  - Observe Photometric standards determine if DESDM can achieve X% astrometry…(not ultimate astrometry).
- ~Oct 14-22:
  - Begin routine first cut production. First cut processing is relevant to commissioning decision making.
  - Additionally, Final cut and co-add on a subset of SNE field. This processing - 200 exposures, requires an illumination correction and fringe in Y. (relevant for SV)

From Don's talk.

DESDM and Science Verification

- Oct 23 – Nov 15.
- Planning less advanced.
- First cut processing
- Co add production from the small patch.

From Don's Excel File (Thu, May 3)

Phase 2a	day in phase	Lead Scientits	Commissioning date/Kind of observations	Turnaround	Overall need	DESDM Role	DESDM Concerns
			Bias Flat Decal Crosstalk, ghosts, scattered Light, picture. fields will			Exercise Calibration processing Exercise First cut	
Phase 2b sept 12-26		1	contain bright stars		By eye, looking for gross, not subtle things	Run Hanlon's Crosstalk code based on Estrada's coefficients.	Is integrated Will hanlon be here?
						Run Hanlon's to compute the coefficients , compare.	Code not currently integrated
	4,6	Wester et al.	DECAL scans			DESDM will see "flats" appearing. May need to process them as flats or do de-bias, etc.	understand DECAL's needs -- this is quite uncertain
	4,6		Darks			Ingest and hold just in case, they will be looked at in Chile.	Dark processing not commissioned in DESDM, hope we do not need darks.
	4,6		DOME flats	3d		DESDM wil produce flats, make available via HTTP	
Phase 2C Oct 6-13	4,5	Tucker, Bernstein	Calibration, star flats Stripe 82.	3d	Survey needs an illumination correction, this is what will be used, not the illumination correction in DESDM. Will require a ~photometric night to acquire data.	Bias, flat, astrometry (e.g distortion correction) and catalog with designated magnitudes. All/most all data need to be processed. Doulas will supply an illumination correction by beginning of processing of teh SNE fields (below) .(n.b. the flat is supplied as pixels, not functional form, for each filter).	Need to learn what kind apeture magnitues suffice. Enhanced goal: PSF (if working)
	1,2	Tucker, Bernstein	Photometry/Astrometry Standards	3d	Observe Photometric standards determine if you can do X% astrometry…(not ultimate astrometry	Need astrometric solution and also run PSM. Use illumination correction if available.	DESDM delivers data to the database. standard stars need to be updated in the database.
Phase 2d Oct 14-22	1,3		Community Scripts				NCSA staff may be fighting fires
	4,6		DES protocol qualification N.b. Before this time, whether the instrument is in shape will really be understood.	1w	do something DES-like and verify CTIO systems work for DES purposes. (exect it would be SNE fields) N exposures,	Begin routine first cut production. Only first cut processing is relevant to comissioniing decision making. Additionally, Final cut and co-add on a subset of SNE field. This processig - 200 exposures, which requires an illumination correction and fringe in Y. RUn2 once w homoginized and ones without.	TBD time prior to this, DESDM will make a supercal and run a high-pass on it to obtain a Fringe correction in Y (mkillumcor)
SV Oct 23 - Nov 15			Community bits				NCSA staff may be fighting fires
			DESDM bits			First cut processing, the coadd from comissioning available.	

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Plausible Data Stream

- Science Verification
  - ~100 x10 sq-degrees first cut
  - ~10 sq-degree coadd
- ~December
  - ~400 x10 sq-deg first cut
  - ~100 sq-deg coadded
- ~Feb-March
  - second coadd of the 100 sq-degree area
- Mid-Summer
  - full reprocessing
  - coadd of ~400 sq-degree
- September
  - observing starts again

From Jim's Talk (Tue, May 15)

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- See also Alistair's Commissioning Plan Document (DES-doc#3734)

- See also my draft DECam Commissioning Calibration Testing Plan (DES-doc#6449)